LRC Indoor Testing & Research
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December 26, 2007

Mr. Scott Simpson
Ritchey & Simpson, PLLC
3288 Morgan Drive, Suite 100
Birmingham, AL 35216-3084

Re: Limited Fungal and Moisture Evaluation of the Murphy Property Located at 5489 Washington Ferry Road, Montgomery, Alabama with Visual Examination, Moisture Meter Readings, Non-viable Airborne Fungal Spore, Surface Fungal, and Bulk Fungal Sampling Performed on December 4, 2007. Project 07-1017.

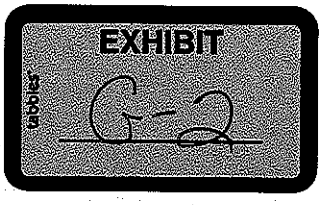
Dear Mr. Simpson:

At your request, LRC, Inc. performed a limited fungal and moisture evaluation of the Murphy property in Montgomery, Alabama with visual examination, moisture meter readings, non-viable airborne fungal spore, surface tape-lift fungal, and bulk fungal sampling on December 4, 2007. Collected samples were recorded on a Chain of Custody and were sent via Federal Express to EMSL Analytical, Inc, 1101-A Aviation Parkway, Morrisville, NC for analysis. EMSL Analytical, Inc. is an AIHA Accredited Laboratory and Participates in the EMLAP/EMPAT programs. I am a qualified IEP as defined by the current industry standards as cited in this report.

The purpose of this report is to 1) evaluate the fungal ecology of the house through visual examination of previously-opened wall cavities (opened from the exterior) with respect to surface, airborne, and bulk fungal spore sample results coupled with moisture meter readings using currently accepted industry standards and guidelines; 2) review and critique "study" methodologies and conclusions regarding the fungal ecology of the house as reported by Mr. Bobby Parks, a previous investigator who has determined that the walls around the house are in a state of degradation due to the presence of moisture and fungal spores in the wall cavities. I have read Mr. Park's reports on the Murphy house and the deposition from Mr. Parks that you provided to me wherein his lack of qualifications and knowledge of any of the currently accepted industry standards, terminology, or evaluative processes for performing fungal evaluations are documented along with his unqualified fungal analysis regarding the Murphy house. I have read the depositions from the homeowners, Mr. and Mrs. Murphy that allude to several previous water incursion issues such as roof leaks and a localized plumbing leak in the master bathroom. I have read the R.T. Bonney, May, 2006 (Bonney) report on the Murphy house.

EXECUTIVE SUMMARY OF CONCLUSIONS

All of my findings and conclusions as stated in this report are based upon a reasonable degree of scientific certainty. The guidelines followed in this report for the assessment of and/or the



remediation of airborne and surface fungi and water damage are published in *Bioaerosols: Assessment and Control,* by the American Conference of Governmental Industrial Hygienists[1] (ACGIH), the EPA's *Mold Remediation in Schools and Commercial Buildings*[2], the ANSI / IICRC S500-2006 *Standard and Reference Guide for Professional Water Damage Restoration* [3] (S500), and the IICRC S-520 *Standard and Reference Guide for Professional Mold Remediation* [4] (S520). Eugene C. Cole, Dr.PH and Professor at Brigham Young University and is currently on our staff at LRC, Inc. Dr. Cole was the sub-committee chair and was responsible for producing Chapter 1 in the S520 entitled "The Fungal Ecology of Indoor Environments." Dr. Cole was also a member of the standard committee that produced the ANSI / IICRC S-500 Standard. The S520 is an accepted industry standard and is currently under review towards becoming an ANSI recognized industry standard regarding the procedures for the evaluation and remediation of surface and indoor airborne fungal amplification. Persons performing water loss and fungal evaluations in buildings should know of these existing industry standard references along with their terminologies and recommended procedures. Chapter 13 of the S520 "defines an Indoor Environmental Professional (IEP) as an individual who is qualified by knowledge, skill, education, training and/or experience to perform an assessment of the fungal ecology of property, systems, and contents at the job site, create a sampling strategy, sample the indoor environment, interpret laboratory data and determine Condition 1, 2, and 3 for the purpose of establishing a scope of work and verifying the return of the fungal ecology to a Condition 1 status."

The indoor environment is comprised of an interrelated complex of microenvironments, each of which has its own mix of physical and biological factors, and can serve as a reservoir for a variety of pollutants that can potentially affect the quality of the air in occupied spaces. Some microenvironments are structural components such as exterior and interior wall cavities, ceiling spaces, air-handling systems, and crawlspaces. Some microenvironments serve as reservoirs that readily collect dusts, soil, and associated microorganisms on a routine basis. Examples include flooring materials, upholstered furniture, textile furnishings, ceiling tiles, bathrooms, and pet areas and HVAC systems.[4] The S520 states that it is highly recommended that the extent and Condition (1, 2, or 3) to which areas of the structure, systems, and contents are potentially mold-contaminated be determined and documented.[4] The IICRC S520 has been written to provide methods and procedures for the mold remediator, whose primary goal is to safely restore Condition 2 or Condition 3 structures, contents or systems to Condition 1 status.[4] Relevant terminologies and recommendations from these standards as they relate to this case are discussed as needed below.

Mr. Parks has admitted that he is not an IEP and has shown little to no knowledge of the terminologies and evaluative procedures in any of the currently accepted standards for evaluating and interpreting mold sampling data. He has a Mold Remediation Contractors certification from the state of Louisiana, but states that he has never performed an actual remediation. Remeditators do not interpret mold data, qualified IEPs do. He has had little or no background or formal education that qualifies him to evaluate and interpret mold sampling data, and he has formed an opinion regarding the Murphy's house that is submitted from an unqualified perspective and not based on sound scientific investigative principals. For example, "an epidemiologic investigation can clarify whether or not there is a building-related problem, its nature, and possible means for resolution"[1]...and..."a well-designed epidemiologic study should include: 1) A definition of what constitutes a case of illness; 2) A study of possible confounding

factors (e.g., other similar illnesses that might not be related to the environment); 3) A selection of appropriate control groups; 4) Carefully designed questionnaires that can be administered with or without an interviewer; and 5) Selection and administration of appropriate diagnostic tests to screen for or confirm disease."[1] A similar scientifically sound approach should be utilized in any investigation that may be trying to determine whether a certain condition or conditions occur in buildings with certain characteristics.

The table below helps clarify which tasks may be performed by a remediator and which ones may be performed by and IEP or others.[4]

Possible Tasks	**Remediator**	**IEP**	**Other***
Initial determination	**X**	**X**	**X**
Occupant information	**X**	**X**	**X**
Occupant characterization and complaints	**X**	**X**	**X**
Detailed health-related interview (follow up)		**X**	**X**
Occupational health evaluation			**X**
Building history	**X**	**X**	**X**
Site safety evaluation	**X**	**X**	**X**
Moisture detection	**X**	**X**	**X**
Intrusive investigation	**X**	**X**	**X**
Pre-remediation assessment		**X**	
Data interpretation and report		**X**	
Scope development	**X**	**X**	
Simple Occupant Health Profile	**X**	**X**	**X**
Technical specifications	**X**	**X**	
Remediation	**X**		
Quality control	**X**	**X**	**X**
Monitoring work environment	**X**	**X**	
Post remediation verification		**X**	

*Qualified and licensed health or medical professional

It is important that individuals who perform the above tasks have sufficient training and experience for those specific tasks and that conflicts of interest between remediation activities and assessment activities be avoided.[4] Based on the above table, Mr. Parks' deposition and his lack of qualifications, he is not qualified to interpret fungal data as discussed in this report.

- Based on the deposition from Mr. Parks, he did not know what a qualified IEP was and he states that he is not one. Mr. Parks admitted that he is not a Public Health Professional, has had no formal training in biology or the environmental sciences, and, in my opinion has no understanding or expertise of the interpretation of fungal sampling data as is discussed in this report.
- Mr. Parks did not know what gypsum wallboard contained, its composition, or its origin, except for Lowes or Home Depot.

- Mr. Parks was not aware of any of the industry standards as stated in this report. His reports show that he did not know proper methodologies for conducting and interpreting mold evaluations or methodologies for conducting a scientifically valid study. He did not know accepted industry terminologies such as "normal fungal ecology", Conditions 1, 2, or 3, the primary, secondary and tertiary mold colonizers and their associated water activity requirements. His reports demonstrate that he has no knowledge regarding the interpretation of sample results in fungal evaluations. Sample result interpretations must include the consideration of other parameters such as observations of the physical circumstance and condition of the materials being sampled.
- Mr. Park's interpretation of the fungal data that he collected is dubious and was submitted from an unqualified perspective.
- In the reports I reviewed, Mr. Parks's had no documentable moisture meter data, and the moisture meter he used is outdated and was not calibrated. Mr. Parks did not ask the Murphy's about any water incursions such as roof leaks or water leaks that they reported in their depositions. Other than his dubious and unqualified interpretation of his fungal sampling results, Mr. Parks provided no photo documentation of visible fungal amplification or degrading wall structures in the wall cavities. Mr. Parks did, however, use an electronic photographic boroscope in the master bathroom wall cavity and showed the Murphys a blown up picture of a "dime-sized" area of fungal contamination causing them alarm. Boroscoping walls is just one tool an investigator may use in order to determine whether there is evidence for further investigative demolition and it should not be used to cause alarm to a homeowner.
- Per my investigation, observations and sample results in wall cavities 3,4,5,6,7, and 8, suggested that they were in a Condition 1 or "normal fungal ecology" as outlined in the S520 *Standard and Reference Guide for Professional Mold Remediation* and no adverse visual or sampling fungal results were present that suggest that the walls need remediation, removal or replacement as Mr. Parks and the Bonney report suggest. There was no evidence to support that the assertion by Mr. Parks that the wall cavities 3,4,5,6,7,and 8 had gross surface fungal amplification or damage and degradation due to mold. This is further supported in the attached report from Progressive Engineering, Inc., that reports that representative wallboard collected from the exterior of the Murphy house had a real moisture content of 0.61% and passed all physical and structural tests reported therein. Based on the data obtained on the investigation day and provided in this report, there is no way to predict future fungal degradation of Condition 1 materials in wall cavities 3,4,5,6,7, and 8. Many times the origin of settled and airborne spores in visibly clean areas or microenvironment is natural and cannot be determined. Settled and airborne spores in microenvironments may originate from natural environmental deposition during construction or re-construction, or from deposition from a current or previous localized amplification source. It is not considered unusual to find fungal spores in a wall cavity.
- Per my investigation, observations and sample results in wall cavities 1 and 2, suggested Conditions 2 and Condition 3 fungal contamination are present and are consistent with homeowner reports of the reported localized water damage due to a broken pipe. In this case, the plumbing leaks in the master bathroom and the crawlspace are implicated and further investigative demolition and remediation is recommended as outlined below.
- Per my investigation, in the crawlspace, many of the support piers were shimmed with wood that were heavily coated with visible fungal amplification. Heavy layers of

oxidized rust were observed on met al support structures throughout the crawlspace. The vapor barrier throughout the crawlspace appeared to have a heavy layer of silt deposition as if water frequently collected there. At the time of this inspection, no standing water was present. Foundation block along the front and back appeared wet, and appeared to be wicking from both the top and bottom in several locations. The dryer vent was observed to be exhausted into the crawlspace area. Visual observations in the crawlspace suggest that it is an area that has had unusual levels of recurrent moisture and humidity in the past. Crawlspaces are notorious environments for the collection, deposition, and sometimes amplification of surface and airborne fungal spores throughout the United States, whether it is due to the soil or materials with increased surface moisture activity or increased or persistent water incursion as was evident in this case.

- Per my investigation, in the undisturbed open ended crawlspace near the back center of the house (Sample 4), total airborne spore levels were measured at 25,400 Spores/m^3 or approximately twenty-five times the outdoor levels and was comprised of more than 17 genera with *Cladosporium* and *Paecilomyces* at (36%), hyphal fragments (10%), unidentified fibrous particulate (10%), 4% each of *Penicillium / Aspergillus* group spores, *Nigrospora*, Ascospores, Basidiospores, 3% each of *Curvularia* and *Pithomyces*, Myxomycetes (2%), and 1% or less each of *Bipolaris, Alternaria, Epicoccum, Tetrapola,* Rusts, *and Botrytis*. Total airborne spore levels in the undisturbed crawlspace entrance were significantly greater than the outdoor air with many other fungal genera present. Due to grossly elevated airborne fungi and airborne fibrous particulate matter found in the crawlspace, and altered fungal ecology and airborne fibrous matter found in the kitchen and not in the other end of the house, the crawlspace is implicated as a possible source of altered airborne fungal ecology in the kitchen area on the day of this investigation.
- Per my investigation, airborne fungal sampling showed that airborne spore levels indoors were approximately the same indoors compared to the outdoors on this day, however, the kitchen area showed some evidence of altered airborne fungal ecology and indoor airborne fungal amplification while the left end hallway did not. The crawlspace is implicated as a possible source of altered indoor airborne fungal ecology in the kitchen due to the presence of fibrous particulate that was found in the crawlspace and kitchen but not in the left end hallway.

SAMPLING

Air Samples. Currently there are no regulations or standards regarding acceptable airborne fungal levels outdoors, indoors, or in other areas of a structure such as a crawlspace or inside wall cavities. Airborne fungal spores are ubiquitous in the outdoor and indoor environment and often the indoor environment is affected by the outdoor air on an hourly, daily, and seasonal basis. The outdoor air is never sterile and often contains in excess of 10^5 fungus spores per cubic meter[1] (Spores/m^3). The indoor environment is an ecosystem comprised of an interrelated complex of microenvironments, each of which can serve as a reservoir for a variety of microbial contaminants that can potentially affect the quality of air in occupied spaces. Some common microenvironments that can collect and retain dusts, soil, and microorganisms routinely include carpet, upholstered furniture, bathrooms, pet areas, and components of heating, ventilating, and air-conditioning systems (HVAC), such as condensate drain pans, and cooling coils.[5] Wall cavities and areas such as crawlspaces as stated in the S520 also can be considered to be

microenvironments as a part of a structure in buildings, however, they are not living spaces. Airborne fungal sampling should be interpreted by a qualified IEP. Based on the deposition from Mr. Parks, he is did not know what a qualified IEP was and he states that he is not one. Mr. Parks admitted that he is not a Public Health Professional, has had no formal training in biology or the environmental sciences, and, in my opinion has no understanding of the interpretation of fungal sampling data as is discussed in this report. In my opinion, based on the materials referenced in this report, Mr. Park's interpretation of the fungal data that he collected is dubious and was submitted from an unqualified perspective.

"Normal" airborne fungal ecology has no concrete definition and may vary widely; however, some researchers have attempted to characterize it in various studies. In a study by Horner, et al, 50 detached single-family homes in the metropolitan Atlanta, GA were assessed to establish "normal or typical" types and concentrations of airborne dusts and dustborne fungi in urban homes which were predetermined not to have noteworthy moisture problems or fungal growth. The top thirty (not in any particular order) most abundant types of airborne fungi in 180-liter samples (with n = 600) were three species of *Cladosporium*, 13 species of *Penicillium*, 3 species of *Aspergillus* (including *A. niger*, and *A. fumigatus*), *Epicoccum nigrum*, 2 species of *Alternaria*, *Curvularia*, *Aureobasidium pullulans*, *Bipolaris sp.*, yeasts, 3 varieties of non-sporulating hyphal fungi, and an Arthrospore former.[6] In a three-year study in the Dallas-Fort Worth area by Kuehn, et al, airborne mycoflora components of domestic interiors of 100 homes were examined to elucidate more fully the fungal species most prevalent within home environments of this region. The study found that *Cladosporium*, *Alternaria*, *Penicillium*, *Drechshlera*, *Epicoccum*, were the most abundant groups of fungal genera from these houses. These genera represent well-known airborne fungal organisms which are most often the predominantly encountered mycoflora in aerobiological samples. In addition to those most encountered, the study also isolated airborne *Aureobasidium*, *Curvularia*, yeasts, *Fusarium*, *Pithomyces*, *Verticillium*, *Geotrichum*, *Nigrospora*, *Stemphylium*, *Stachybotrys*, *Botrytis*, *Cephalosporum*, and *Chrysosporum*, among others.[7] Indoor living spaces and microenvironments and outdoor fungal spore genera and concentrations may vary widely over seasons, weeks, days, and hours and due to many factors including the region climate and number of air exchanges that each house has per day with the outdoor air among a number of other factors.

Descriptively "high" fungal levels as cited by Mr. Parks are referenced in "Baxter, ETS" and the "National Allergy Bureau". "Baxter ETS" states that "While there is no well-established quantitative standard for fungal spores on surfaces or in air, mold contamination is considered present in a building when the total mold spore concentration per cubic meter of air is above 10,000."[8] In another Baxter reference, it states that "indoor amplification is likely present at 5,000 - 10,000 Spores (cts/m^3) with the predominant types being Penicillium, Aspergillus, Cladosporium."[9] Both Baxter references refer to "indoor air in a building" [occupant spaces], not to microenvironments such as wall cavities or other non-living areas such as crawlspaces. The National Allergy Bureau (NAB) scale for mold counts states that counts between 6,500 and 12,999 counts/m^3 represent "moderate" levels, and that counts between 13,000 and 49,999 counts/m^3 represent "high" levels. The NAB qualifies these counts stating "These mold levels were determined based on outdoor exposure to natural occurring spores in the environment and should not be applied to indoor exposure which may represent an entirely different spectrum of

spore types."[10] The Baxter, ETS and National Allergy Bureau citations are arbitrary and are not scientifically linked to any human exposures or health issues.

Airborne fungal assessments in buildings are performed by comparing results from volumetric sample(s) taken in indoor living spaces to sample(s) taken outdoors at a given time. Airborne fungal levels in non-problem indoor living environments generally are less than or approximately the same as those outdoors and also show a similar composition and /or taxonomic predominance. Problems are usually implicated in the indoor living space air when one or more fungal genera or species are present in a much greater concentration indoors compared to outdoors. Airborne fungal sampling with any method or in any area may be performed under quiescent undisturbed conditions and with air handlers on or off to obtain "representative normal conditions", or it may be performed after some disturbance is induced by the investigator such as banging on duct[1], a wall, insulation, upholstery, or carpet, for example or after some demolition to show "worst case" scenario. Sampling in such a manner is not normally performed, but may sometimes be useful and is sometimes referred to as "semi-aggressive sampling" (www.emlab.com/s/sampling/Nonculture.html)[11]. Any air sampling results obtained after "quiescent sampling" or "aggressive sampling" should be reported in the context of the sampling method used along with other measures such as observations of the physical circumstance and condition of the materials in the areas being sampled.

Representative non-viable cassette impaction spore samples were collected on December 4, 2007 at the Murphy house under non-disturbed or "normal" conditions indoors and outdoors (Samples 1,2,3 and 11), and representative crawlspace samples were collected in a "quiescent or normal" manner and in a "disturbed or aggressive" manner (Samples 4 and 5, respectively). The volume of each sample was 75-Liters. Spore trap results are reported in the number of spores per cubic meter (Spores/m^3).

Surface Samples. Surface sampling fungal results should be interpreted by a qualified IEP as stated in the S520 and should be evaluated using the accepted industry standards. In those standards, the terms "visible fungal amplification or visible fungi" is often termed the primary indicator of contamination. Surface sampling results can confirm the visual condition of the material when interpreted by a qualified IEP using the accepted industry standards. It is also very important for the IEP to understand and communicate with the analytical laboratory regarding surface fungal sampling results. Various laboratory reports should, but do not always, report indicators such as the presence or absence of fungal growth structures such a mycelia, conidiophores, and hyphae that can help to provide an indication of actual growth (whether viable or not) versus the mere presence of settled spores. EMSL Laboratories. Inc. provides such information as discussed below.

Under normal circumstances, building materials that appear clean and free of dirt, water damage, and/or fungal amplification should show "Condition 1" or "normal fungal ecology". Condition 1 is described in the Standard as "an indoor environment that may have settled spores, fungal fragments or traces of actual growth whose identity, location and quantity are reflective of a normal fungal ecology for a similar indoor environment." Results from sampling "clean" surfaces, if performed, should show that there is no evidence of visible gross fungal amplification. "Normal fungal ecology is a term that was arrived at by consensus while developing the First Edition of the S520. It was intended to describe an indoor environment that

was not contaminated.[12] It's practically impossible to clearly define what is considered to be "normal" fungal ecology on a specific building material in [a] certain type of building at its own age located in each climate regions.[12] Condition 2 is described as "an indoor environment which is primarily contaminated with settled spores that were dispersed directly or indirectly from a Condition 3 area, and which may have traces of actual growth." Condition 3 is described as "an indoor environment contaminated with the presence of actual mold growth and associated spores".[3] Condition 1 or normal surface fungal ecology can vary widely among various types of microenvironment surfaces in homes and structures and may vary widely due to their physical locations in a home or building among other factors. In a study by Pasanen, et al, building materials were collected consisting of gypsum (wall board) from an office building built in the 1970's, particle board from a partition in a house that was built in the 1980's, and wood boards from a unheated storehouse (for over five years). The gypsum and particle board were reported to appear clean, while the stored wood appeared slightly blue-stained. Prior to the study, an assessment was made of the fungal ecology of each material. The mean total spore concentrations were 3.8×10^5 spores/g in the gypsum board, 3.0×10^6 spores/g in the particle board, and 1.9×10^6 spores/g in the wood board.[13] In a study by Cole, et al, a 10-week 10 home study was conducted in humid Raleigh, North Carolina in part to characterize "mold and mildew" on 24 hard surface sites associated with moisture in homes. After professional cleaning and standardization of cleaning products in each home, the 24 sites in each home were sampled two-times per week in 5 homes treated with a disinfectant three times per week and in 5 control homes where no surface disinfectant treatment was applied. Sampling sites included window frames, sink/tub faucets, toilet-floor and tub-floor interfaces, under sink plumbing and cabinets, dishwasher vent, floor under washing machine, laundry room walls, shower curtain liners, and trash cans. Samples (n = 4,800) were processed for culturable fungi (molds and yeasts). Results showed that under normal household conditions, mildew in these microenvironments consisted of more than 30 different fungi, many of which are considered potentially allergenic, and opportunistic, such as species of *Cladosporium*, *Penicillium*, *Aspergillus*, *Fusarium*, *Aureobasidium*, *Paecilomyces*, *Alternaria*, *Trichoderma*, *Phialophora*, *Ulocladium*, *Stachybotrys/Memnionella*, *Wallemia*, and *Acremonium*. Dusts collected from upholstered furniture and pet areas showed a fungal ecology to similar hard surfaced sites associated with moisture.[14] In another study by Cole, et al, in 16 non-complaint commercial and residential buildings, the average level of fungal spores in dust from carpets was 5.9×10^4 Spores/g of carpet dust.[15] These studies illustrate that Condition 1 "normal surface fungal ecology" can vary greatly on surfaces in various microenvironments, thus it is imperative that any fungal sample result be interpreted according to the visible condition of the surface or microenvironment being tested, other physical parameters such as measurements of moisture content, evidence or reports of water incursions, and details provided in the laboratory analysis reports.

In his deposition, Mr. Parks stated that he did not know what gypsum wallboard was or where it originated from, and his reports indicate that he was not aware of any of the industry standards regarding mold assessment as stated in this report. His reports show that he did not know proper methodologies for conducting and interpreting mold evaluations or methodologies for conducting a scientifically valid study. He did not know accepted industry terminologies such as "normal fungal ecology", Conditions 1, 2, or 3, the primary, secondary and tertiary mold colonizers and their associated water activity requirements, or the recommended procedures for performing proper fungal evaluations. Mr. Park's interpretation of the fungal data that he collected is dubious and was submitted from an unqualified perspective.

Surface tape lifts are analyzed microscopically and are used as a qualitative measure of surface fungal contamination and can show both active (live) and inactive fungal spores. Qualitative and quantitative fungal sampling methods including tape lifts, swabs, bulk samples, and wall check samples from the same surface or area can produce seemingly different results due to the levels and condition of the surface fungi present and due to the inherent differences in sampling and analysis methods. Any type of fungal sampling result should be described and results should be reported and used with the consideration of other measures such as observations of the physical circumstance and condition of the material being sampled.

Sampling results are summarized in Table I and Table II and are reported in the EMSL, Inc. Certificates of Laboratory Analysis attached to this report. Observations and sample results are discussed below.

WALL CAVITY RESULTS

Observations, Surface Tape, Bulk Sample, and Moisture Results

Representative tape lift samples and insulation bulk samples were taken from the interior of the previously opened wall cavities (Numbered 1 – 8 in Figure 1) immediately adjacent to areas where Mr. Parks had removed sections of wall board paper from the back of the interior wallboard. I began my investigation at location #3 and proceeded to the other wall cavities counter-clockwise around the perimeter of the house from #4 around to #2. The cavity areas, except where noted were at least 5-feet above the ground. A Protimeter Moisture Meter (Bar code BLD536039Q0102) was used in the non-penetrating and pin or penetrating mode to test moisture levels of the wallboard near the areas sampled. Post measurement calibration check of the Protimeter showed that it was on calibration, measuring 18.3% on the calibration check. The tolerance of the calibration check is 18.2% ± 1.0 %. Mr. Parks's reports had no documentable moisture meter data, and the moisture meter he used is reportedly outdated and not calibrated. Mr. Parks did not ask the Murphy's about any water incursions such as roof leaks or water leaks that they reported in their depositions. Other than his dubious and unqualified interpretation of his sampling results, Mr. Parks provided no photo documentation of visible fungal amplification or degrading wall structures in the wall cavities. Mr. Parks did, however, use an electronic photographic boroscope in the master bathroom wall cavity and showed the Murphys a blown up picture of a "dime-sized" area of fungal contamination causing them alarm. Boroscoping walls is just one tool an investigator may use in order to determine whether there is evidence for further investigative demolition and it should not be used to cause alarm to a homeowner. Fungal sample result interpretations must performed by a qualified IEP and should include the consideration of other parameters such as observations of the physical circumstance and condition of the materials being sampled.

Surface wallboard tape lift samples were 1in^2 per slide. For the bulk insulation, EMSL cut a 1 in^2 sub-sample from each sample, swabbed the sub-sample thoroughly, and rolled the swab onto a 1 in^2 tape lift. EMSL reports tape lift results as Rare (1 to 10 spores per slide, Low (11 to 100 spores per slide), Medium (101-1000 spores per slide), and High (>1000 spores per slide).

Cavity #3 – The back of the interior wallboard and adjacent wood stud showed no visible evidence of water damage or fungal amplification and penetrating moisture meter readings were in the dry range from 8% to 10%. Tape lift results from the wallboard (Sample 6) showed only low *Penicillium / Aspergillus* group spores with no evidence of fruiting structures, suggesting only settled spores. Insulation results (Sample 7) showed only low *Penicillium / Aspergillus* group spores and rare *Cladosporium* spores with no evidence of fruiting structures, suggesting only settled spores. Sampling results confirmed visual observations of a Condition 1 as described above in Cavity #3.

Cavity #4 – The back of the interior wallboard and adjacent wall stud showed no visible evidence of water damage or fungal amplification and the penetrating moisture meter reading on the wood was 0% and the wallboard was in the dry range at 11% to 16% in the non-penetrating mode and 9% in the penetrating mode. Tape lift results (Sample 8) showed only no detectable spores present. Insulation results (Sample 9) also showed no detectable spores present. Sampling results confirmed visual observations of a Condition 1 as described above in Cavity #4.

Near Cavity #4 Inside the House - Slightly discolored insulation (Sample 15) at the edge of a wall cavity on the interior of the house in bedroom #3 exterior wall closet was taken that showed no fungal spores were detected. Observations from the interior walls in the bedroom #3 closet appeared clean and showed no visible signs of water damage or fungal amplification indicating a Condition 1 as described above.

Cavity #5 – The back of the interior wallboard showed no visible evidence of water damage or fungal amplification and the penetrating moisture meter was in the dry range at 8%. Tape lift results (Sample 12) showed only medium *Penicillium / Aspergillus* group, low *Cladosporium* spores and rare *Curvularia* spores with no evidence of fruiting structures, suggesting only settled spores. Insulation results (Sample 13) showed no detectable spores. Sampling results confirmed visual observations of a Condition 1 as described above in Cavity #5.

Cavity #6 – The back of the interior wallboard showed no visible evidence of water damage or fungal amplification and the penetrating moisture meter was in the dry range at 9%. Tape lift results (Sample 14) showed only rare *Penicillium / Aspergillus* group spores and Basidiospores with no evidence of fruiting structures, suggesting only settled spores. No insulation was taken from cavity #6. Sampling results confirmed visual observations of a Condition 1 as described above in Cavity #6.

Cavity #7 – The back of the interior wallboard showed no visible evidence of water damage or fungal amplification and the penetrating moisture meter was in the dry range at 7% to 8%. Tape lift results (Sample 16) showed only low *Penicillium / Aspergillus* group spores with no evidence of fruiting structures, suggesting only settled spores. Insulation results (Sample 17) showed no detectable spores. Sampling results confirmed visual observations of a Condition 1 as described above in Cavity #7.

Cavity #8 – The back of the interior wallboard showed no visible evidence of water damage or fungal amplification and the penetrating moisture meter was in the dry range at 8%. Tape lift results (Sample 18) showed no detectable spores. Insulation results (Sample 19) also showed no

detectable spores. Sampling results confirmed visual observations of a Condition 1 as described above in Cavity #8.

Cavity #1 – Cavity # 1 was associated with the end-wall of the master bathroom and was observed both above 5-feet and at or near ground level due to homeowner reports of a previous plumbing leak in the master bathroom. Above 5-feet, visible fungal amplification was observed in the form of a darkened area approaching several square inches. Areas of wallboard around the darkened area appeared clean. A tape lift of the darkened patch (Sample 20) showed high levels of *Penicillium / Aspergillus* group spores with low levels of *Cladosporium* spores. While the area was currently dry at 8%, visual observations and sample results confirmed a Condition 2 or 3 as described above where the wallboard was darkened. A sample was taken from visibly clean wallboard next to the darkened area (Sample 22) that showed only low *Penicillium / Aspergillus* group spores and medium *Cladosporium* spores, suggesting a Condition 1 as described above. Insulation results (Sample 21) showed medium *Penicillium / Aspergillus* group spores and rare *Cladosporium* spores, suggesting a Condition 1 or Condition 2 due to the proximity to the darkened area as described above. At or near ground level, no visible fungal amplification was observed in Cavity #1.

Cavity #2 – Cavity # 2 was associated with the back wall of the master bathroom and was observed above 5-feet on this occasion, and as in Cavity #1, the homeowner reported a previous plumbing leak in that location. At approximately 5-feet, visible fungal amplification was observed on the wallboard. A photograph from a previous investigator supplied to me showed an obvious water stain on the wallboard at or near the floor level. A tape lift of the visible fungal amplification (Sample 23) showed high levels of *Penicillium / Aspergillus* group spores with low levels of *Cladosporium* spores and rare *Chaetomium* spores. Insulation results (Sample 24) showed no detectable spores. While the area was currently dry at 8%, visual observations and sample results confirmed a Condition 3 as described above in wall Cavity #2.

New Insulation: Sample 10 was taken as a "control sample" of new insulation off of the contractors' truck that showed no detectable fungal spores.

Per my investigation, observations and sample results in wall cavities 3,4,5,6,7, and 8, suggested that they were in a Condition 1 or "normal fungal ecology" as outlined in the S520 *Standard and Reference Guide for Professional Mold Remediation* and no adverse visual or sampling fungal results were present that suggests that the walls need remediation, removal or replacement as Mr. Parks and the Bonney report suggest. There was no evidence to support that the assertion by Mr. Parks that the wall cavities 3,4,5,6,7,and 8 had gross surface fungal amplification or damage and degradation due to mold. This is further supported in the attached report from Progressive Engineering, Inc., that reports that representative wallboard collected from the exterior of the Murphy house had a real moisture content of 0.61% and passed all physical and structural tests reported therein. Based on the data obtained on the investigation day and provided in this report, there is no way to predict future fungal degradation of Condition 1 materials in wall cavities 3,4,5,6,7, and 8. Many times the origin of settled and airborne spores in visibly clean areas or microenvironment is natural and cannot be determined. Settled and airborne spores in microenvironments may originate from natural environmental deposition during construction or re-construction, or from deposition from a current or previous localized amplification source. It is not considered unusual to find fungal spores in a wall cavity. Results in wall cavities 1 and 2,

suggested Conditions 2 and Condition 3 fungal contamination are present and are consistent with homeowner reports of the reported localized water damage due to a broken pipe. In this case, the plumbing leaks in the master bathroom and the crawlspace are implicated and further investigative demolition and remediation is recommended as outlined below.

CRAWLSPACE RESULTS

Observations, Air, and Surface Tape Sample Results

The crawlspace was completely open along the back of the house. Many of the support piers under the house were shimmed with wood that appeared heavily coated with visible fungal amplification. Heavy layers of oxidized rust were observed on met al support structures throughout the crawlspace. The vapor barrier throughout the crawlspace appeared to have a heavy layer of silt deposition as if water frequently collected there. At the time of this inspection, no standing water was present. Foundation block along the front and back appeared wet, and appeared to be wicking from both the top and bottom in several locations. The dryer vent was observed to be exhausted into the crawlspace area. Visual observations in the crawlspace suggest that it is an area that has had unusual levels of moisture in the past. This is also supported by the sampling data below.

In the undisturbed open ended crawlspace near the back center of the house (Sample 4), total airborne spore levels were measured at 25,400 Spores/m^3 or approximately twenty-five times the outdoor levels and was comprised of more than 17 genera with *Cladosporium* and *Paecilomyces* at (36%), hyphal fragments (10%), unidentified fibrous particulate (10%), 4% each of *Penicillium / Aspergillus* group spores, *Nigrospora*, Ascospores, Basidiospores, 3% each of *Curvularia* and *Pithomyces*, Myxomycetes (2%), and 1% or less each of *Bipolaris*, *Alternaria, Epicoccum, Tetrapola,* Rusts, *and Botrytis*. Total airborne spore levels in the undisturbed crawlspace entrance were significantly greater than the outdoor air with many other fungal genera present. In the disturbed crawlspace (by crawling) in the center (Sample 5), total airborne spore levels were overloaded on the sample and could not be measured. The air in the disturbed crawlspace was comprised of more than 16 genera. The overloaded sample contained *Cladosporium*, *Paecilomyces, hyphal fragments, Penicillium / Aspergillus* group spores, *Nigrospora*, Ascospores, Basidiospores, *Curvualria*, Myxomycetes, *Bipolaris*, *Alternaria*, *Epicoccum*, *Tetrapola,* rusts, *Ganoderma*, and *Spegazzinia*. Total airborne spore levels in the undisturbed crawlspace were significantly higher than the outdoor air. As discussed above, the crawlspace showed ample evidence of water incursion, had wicking wet foundation block in the front and back, and had visible fungal amplification on many of the wooden pier shims.

Crawlspace Pier Front- Many of the support piers under the house were shimmed with wood that appeared heavily coated with visible fungal amplification. A representative sample was taken from visible fungal amplification on a pier shim in the front (Sample 25) that showed high Ascospores, Bispora (wood rot fungi), *Sporidesmium*, and low *Penicillium / Aspergillus* group spores. Visual observations and sample results confirmed a Condition 3 as described above.

Crawlspace Pier Back- A representative sample was taken from visible fungi on a pier shim in the back of the house (Sample 26) that showed high hyphal fragments, low *Sporidesmium*, and

rare *Chaetomium, Curvularia, and Epicoccum* spores. Visual observations and sample results confirmed a Condition 3 as described above.

LIVING SPACE AIR SAMPLE RESULTS

Total Non-viable Spore Air Sample Results. Outdoor total airborne spore levels in the front yard (Sample 1) were measured at 1,470 Spores/m^3 that were comprised of at least 6 genera with Basidiospores (54%), *Cladosporium* (26%), Ascospores (9%), Myxomycetes (6%), and 3% each of *Epicoccum* and *Spegazinnia.* In the back yard total airborne spore levels (Sample 11) were similar and were measured at 1,090 Spores/m^3 that were comprised of at least 7 genera with *Cladosporium* (42%), Basidiospores (38%), *Epicoccum* (8%), with 4% each of hyphal fragments, Ascospores, Myxomycetes, and *Alternaria.* The average outdoor level was 1,280, with a predominance of Basidiospores and *Cladosporium.*

In the undisturbed kitchen near the floor register (Sample 1), total airborne spores were measured at 1,130 Spores/m^3 or approximately the same as levels outdoors. The air in the kitchen at the moment the sample was taken was comprised of at least 6 genera with a predominance of *Penicillium / Aspergillus* group spores (71%) and *Cladosporium* (11%), hyphal fragments (11%), Ascospores (7%), and 4% each of Basidiospores, Myxomycetes, *Pestalotia*, and unidentified fibrous particulate matter. While total airborne spore levels in the undisturbed kitchen were approximately the same as the outdoor levels, there was a predominance of *Penicillium / Aspergillus* group spores that were not detected outdoors. Results suggested evidence of altered airborne fungal ecology and evidence of airborne fungal amplification in the undisturbed kitchen at the time of sampling. In the undisturbed hallway at the left end of the house, (Sample 2), total airborne spores were measured at 740 Spores/m^3 or approximately 50% of the levels outdoors. The air in the left hallway at the moment the sample was taken was comprised of at least 8 genera with *Cladosporium* (51%), 11% each of Basidiospores, *Curvularia*, and *Alternaria*, 6% each of hyphal fragments, *Spegazzinia*, and *Arthrinium*, with detection limit levels of Myxomycetes. Results suggested no evidence of altered airborne fungal ecology and no evidence of airborne fungal amplification in the left end hallway. No airborne *Stachybotrys* or *Chaetomium* spores were isolated from the indoor air. Due to grossly elevated airborne fungi and airborne fibrous particulate matter found in the crawlspace, and altered airborne fungal amplification and airborne fibrous matter found in the kitchen and not in the left end of the house, the crawlspace is implicated as a possible source of indoor altered airborne fungal ecology in the kitchen area on the day of this investigation.

DETERMINING WALLBOARD REPLACEMENT

In addition to the Conditions 1-3 as described above, the S520 also provides the following. In Section 3 "Definitions" sates: "**Preliminary determination**: a conclusion drawn from the collection, analysis and summary of information obtained during an initial inspection and evaluation to identify areas of moisture intrusion and actual or potential mold growth." In Section 4 "Principles of Mold Remediation", section 4.2.2 states "**Pre-Remediation Determination** - It is highly recommended that the extent and Condition (1,2, or 3) to which areas of the structure, systems and contents are potentially mold-contaminated be determined and documented." As discussed above, these determinations should be made by a qualified IEP.

The current standards for remediating fungal amplification on porous materials such as wallboard are also published in the *S520*. The S520 defines materials with a mold Condition 3 as "....contamination with the presence of actual mold growth and associated spores. Actual growth includes growth that is active or dormant, visible or hidden" in Section 3, p.14. The S520 states that "physically removing mold contamination is the primary means of remediation" and that "attempts to kill or encapsulate mold generally are not adequate to solve the contamination problem" in Section 3, 4.4 - Contaminant Removal, P.16; and in Chapter 3, - Principals of Mold Remediation, point 4 - Physically remove the contamination (source removal); and in ACGIH Bioaerosols: Assessment and Control 16.2.3". Cleaning and removing mold amplification from the surface of materials generally refers to salvable hard surfaced materials such as wood framing members, but not to porous materials such as wet wallboard that has attained "Condition 3" contamination. The S520 states that "it is highly recommended that porous building materials with mold penetrating the surface...be removed and discarded appropriately" in Section 10.8, p.24. Also, Section 10.9 of the S520 states "source removal of contaminated porous materials is the preferred method for mold remediation." Furthermore, in section 10.8.2., on p.25, the S520 discusses the proper disposal of contaminated gypsum board.

CONCLUSIONS

All of my findings and conclusions as stated in this report are based upon a reasonable degree of scientific certainty. Observations and measurements as reported by LRC, Inc. apply only to the time and date of this inspection only. LRC, Inc. cannot and does not warranty that the entire structure was completely free or will remain free in the future from other hidden sources of moisture or fungal contamination.

Wall cavity observations and sample results in cavities 3,4,5,6,7, and 8, suggested that they were in a Condition 1 or "normal fungal ecology" as outlined in the S520 *Standard and Reference Guide for Professional Mold Remediation* and no adverse fungal evidence was present that suggests that the walls need remediation, removal or replacement. There was no evidence to support that the assertion that the wall cavities 3,4,5,6,7,and 8 had gross surface fungal amplification or damage and degradation due to mold. This is further supported in the attached report from Progressive Engineering, Inc., that reports that representative wallboard collected from the exterior of the Murphy house had a real moisture content of 0.61% and passed all physical and structural tests reported therein. Based on the data obtained on the investigation day and provided in this report, there is no way to predict future fungal degradation of Condition 1 materials in wall cavities 3,4,5,6,7, and 8. Many times the origin of settled and airborne spores in visibly clean areas or microenvironment is natural and cannot be determined. Settled and airborne spores in microenvironments may originate from natural environmental deposition during construction or re-construction, or from deposition from a current or previous localized amplification source. It is not considered unusual to find fungal spores in a wall cavity. As such, interior surfaces of walls that are in a Condition 1 and that show a particular level of airborne fungal spores are rarely deemed to need replacement. Sample result interpretations must include the consideration of other parameters such as observations of the physical circumstance and condition of the materials being sampled.

Wall cavity observations and sample results in cavities 1 and 2, suggested that a Condition 2 and a Condition 3 are present and are consistent with reports of the reported localized water damage.

In this case, the plumbing leaks in the master bathroom and the crawlspace are implicated and further investigative demolition and remediation is recommended. Remedial recommendations for the master bathroom are outlined below.

The crawlspace was completely open along the back of the house. Many of the support piers under the house were shimmed with wood that appeared heavily coated with visible fungal amplification. Heavy layers of oxidized rust were observed on met al support structures throughout the crawlspace. The vapor barrier throughout the crawlspace appeared to have a heavy layer of silt deposition as if water frequently collected there. At the time of this inspection, no standing water was present. Foundation block along the front and back appeared wet, and appeared to be wicking from both the top and bottom in several locations. The dryer vent was observed to be exhausted into the crawlspace area. Visual observations in the crawlspace suggest that it is an area that has had unusual levels of moisture in the past. Crawlspaces are notorious environments for the collection, deposition, and sometimes amplification of surface and airborne fungal spores throughout the United States, whether it is due to the soil or materials with increased surface moisture or increased or persistent water incursion as was evident in this case.

Airborne fungal sampling showed that airborne spore levels indoors were approximately the same indoors compared to the outdoors on this day, however, the kitchen area showed some evidence of altered airborne fungal ecology and indoor airborne fungal amplification while the left end hallway did not. Due to grossly elevated airborne fungi and airborne fibrous particulate matter found in the crawlspace, and altered airborne fungal amplification and airborne fibrous matter found in the kitchen and not in the left end of the house, the crawlspace is implicated as a possible source of indoor airborne fungal amplification in the kitchen area on the day of this investigation.

RECOMMENDATIONS

In the master bathroom, localized fungal amplification was observed in the wall cavities due to the previously reported water damage from a broken pipe. It is recommended that the master bathroom back and side walls be thoroughly investigated and remediated by an IICRC or ASCR certified mold remediation company. This should be done using investigative demolition as outlined below. All remediation procedures should follow the guidelines as outlined in the IICRC S520 *Standard and Reference Guide for Professional Mold Remediation* and the remediation should be performed as such while protecting workers, occupants, contents, and the indoor spaces from disturbed dusts and associated components such as fine particulate matter and mold spores.

Recommendations are as follows:

1. Remove contents from bathroom and place the bathroom under containment from the remainder of the house with six-mil polyvinyl plastic and place the area under negative pressure with HEPA-filtered air exhausted to the outdoors. Floor areas in the bathroom should be investigated similarly. It is possible that base cabinets and the bath tub may need to be moved to effect remediation. Re circulating HEPA filtered air scrubbers should be placed outside of the containment in other areas of the house.

2. Any HVAC supply registers or return grills if present in the contained area should be covered with polyvinyl plastic.
3. Contaminated and/or water damaged porous wall materials in the bathroom should be removed, double bagged in polyvinyl bags and removed from the containment. Any wallboard materials with fungal amplification should be removed 24" beyond visible contamination. Remaining hard surfaced materials that show fungal amplification should be HEPA-vacuumed, and cleaned by scraping, sanding, or other means such as soda or carbon dioxide blasting and HEPA-vacuuming, and dried to appropriate levels. Any materials that are deemed to have lost structural integrity should be removed and replaced. After cleaning and drying, an appropriate biocide or sealant may be used after a clearance evaluation.
4. After cleaning and remediation in the master bathroom area surface and air clearance testing is recommended.

Please call if you have any questions or concerns.

Sincerely yours,

Keith E. Leese, REHS, WLR
Senior Environmental Scientist

Attachments/ Table I, Table II, Figure 1, Photographs, PEI Report
File: 07-1017

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TABLE I. Air Spore Trap Samples from the Murphy House on December 4, 2007. Project 07-1017

Sample Number	Sample Location	Sample Type	Result Spores	Per Unit	Predominant Organism (%)
01	Kitchen/ Register	Spore Trap (75L)	1,130	m^3	*Aspergillus/Penicillium* (71%), *Cladosporium* (11%), Ascospores (7%), Basidiospores (4%), Myxomycete (4%), *Pestolotia* (4%) Hyphal Fragments 126 per m^3
02	Left End House/ Center	Spore Trap (75L)	740	m^3	*Cladosporium* (51%), *Alternaria* (11%), Basidiospores (11%), *Curvularia* (11%), *Arthrinium* (6%), *Spegazzinia* (6%), < 1% Myxomycete, *Tetraploa* Hyphal Fragments 42per m^3
03	Outdoor Air/ Front Yard	Spore Trap (75L)	1,470	m^3	Basidiospores (54%), *Cladosporium* (26%), Ascospores (9%), Myxomycete (6%), *Epicoccum* (3%), *Pestolotia* (3%) No Hyphal Fragments seen
04	Crawlspace Door	Spore Trap (75L)	25,400	m^3	*Cladosporium* (36%), *Paecilomyces (36%), Aspergillus/ Penicillium* (4%), *Nigrospora* (4%), Ascospores (3%) Basidiospores (3%), *Curvularia* (3%), *Pithomyces* (3%), *Myxomycete* (2%), *Alternaria* (1%), *Bipolaria* (1%),Unidentified (1%), <1% *Agrocybe/Coprius, Epicoccum,* Rust, *Botrytis, Pestolotia, Tetraploa* Hyphal Fragments 2600 per m^3
05	Crawlspace Center	Spore Trap (75L)	Overloaded	m^3	Spores present-*Alternaria,* Ascospores, *Aspergillus, Penicillium,* Basidiospores, *Bipolaris, Cladosporium, Curvularia, Epicoccum, Ganoderma,* Myxomycete, *Paecilomyces,* Rust, *Nigrospora, Spegazzinia, Tetraploa* Hyphal Fragments-present
11	Outdoor Air/ Back Yard	Spore Trap (75L)	1,090	m^3	*Cladosporium* (42%), Basidiospores (38%), *Epicoccum* (8%), *Alternaria* (4%), Ascospores (4%), Myxomycete (4%) Hyphal Fragments 42 per m^3

TABLE II

Surface Tape Lift Samples of Backside of Interior Wallboard and Bulk Samples of Insulation from Wall Cavities at Murphy House Previously Opened by Bobby Parks.
Project 07-1017

Location	Hole 3		Hole 4		Hole 5		Hole 6	Hole 7		Hole 8		Hole 1			Hole 2		Bdrm 3	New	Crawl space	Crawl space
Sample #	6	7	8	9	12	13	14	16	17	18	19	20	22	21	23	24	15	10	25	26
Material	W*	I**	W	I	W	I	W	W	I	W	I	W Stain	W	I	W Stain	I		I	Wood Shim	Wood Shim
Ascospores																			High	
Asp/Pen	Low	Low			Med		Rare	Low				High	Low	Med	High				Low	
Bispora																			High	
Basidiospore							Rare													
Chaetomium															Rare					Rare
Cladosporium		Rare			Low							Low	Med	Rare	Low					
Curvularia					Rare															Rare
Epicoccum																				Rare
Sporidesmium																			High	Low
Hyphal Fragments																Rare			High	High
Fiber	Low	High	Med	High	High	Med	Low	Med	High	Med	High	Med	Med	High	High	High	High	High		
Pollen																	Rare	Rare		

* W = Wallboard Tape Lift Sample
** I = Insulation Bulk Sample

Figure 1. Wall cavity locations and observations at the Murphy house on December 4, 2007. (Drawing not to scale)

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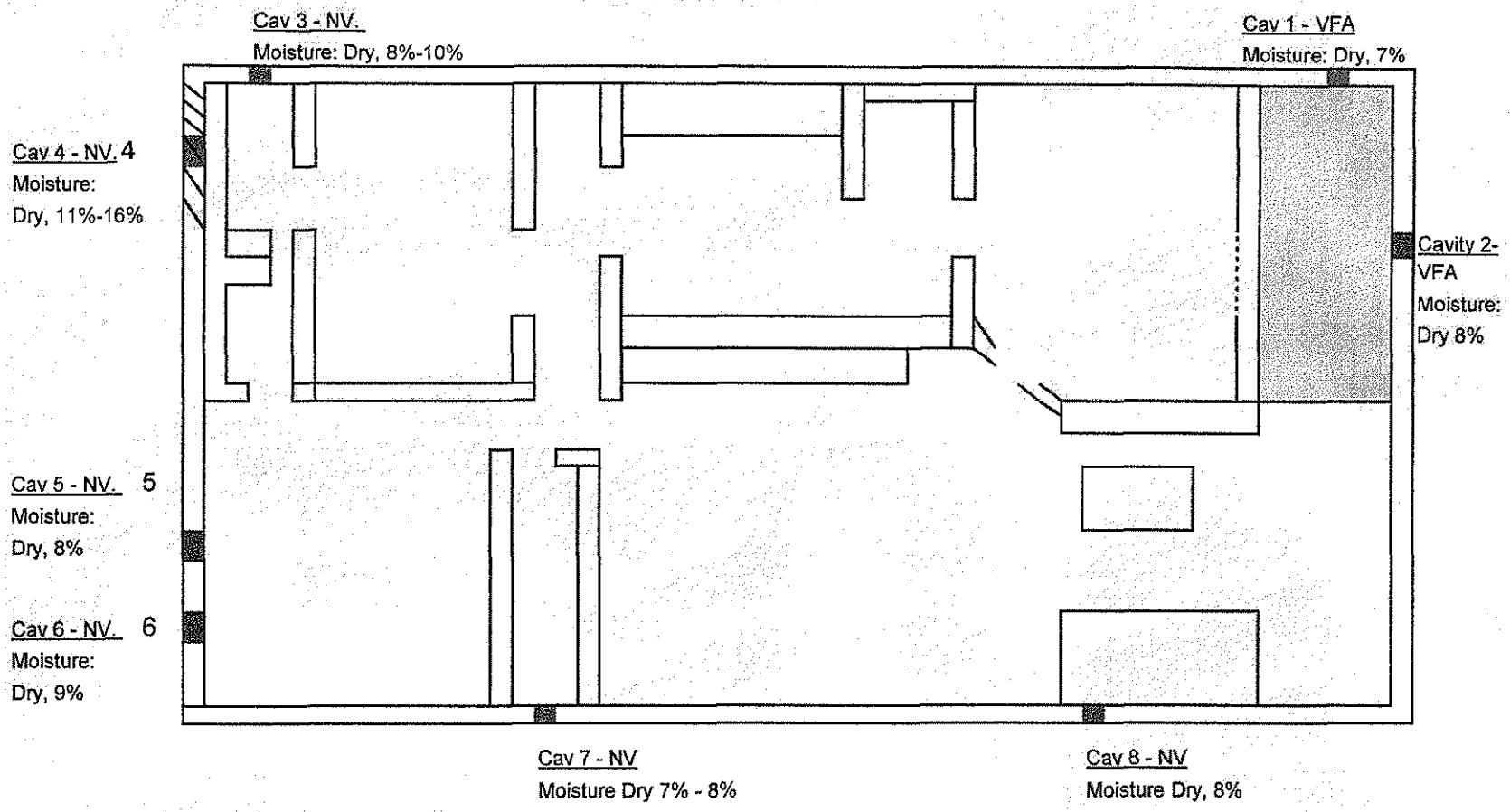

KEY: NV = No visible fungal amplification. VFA = Visible fungal amplification. = Area of reported water incursion from broken pipe

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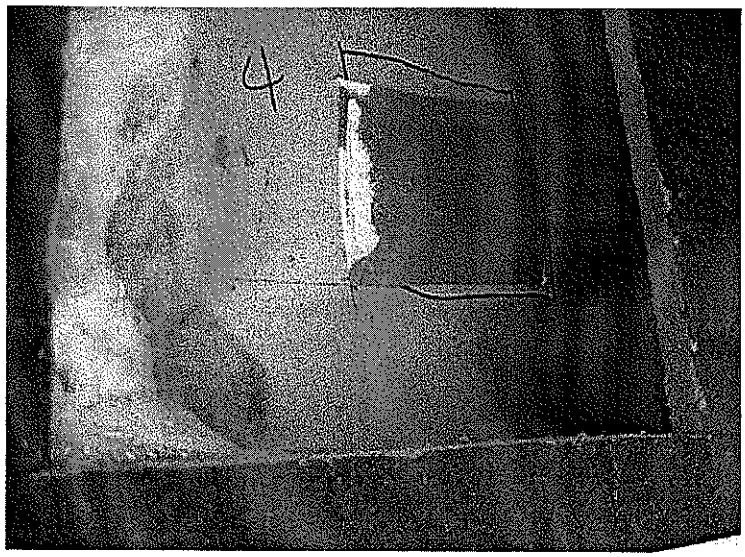
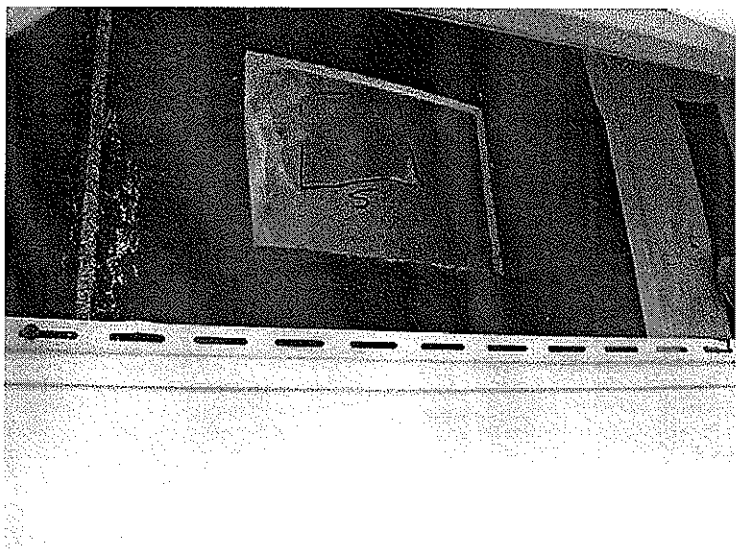
PHOTOGRAPHS

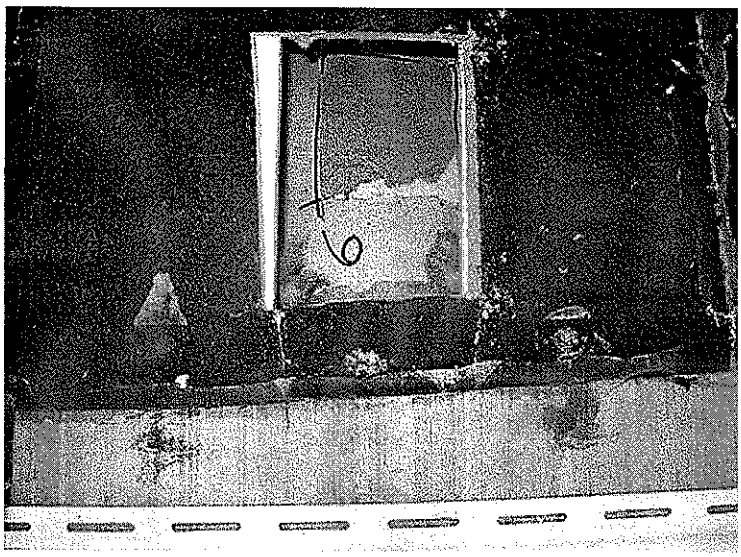
Wall Cavity #3 – Normal freckled paper wallboard with no visible fungal amplification, water damage, or degradation and dry moisture content measured pronged at 8% to 10%.



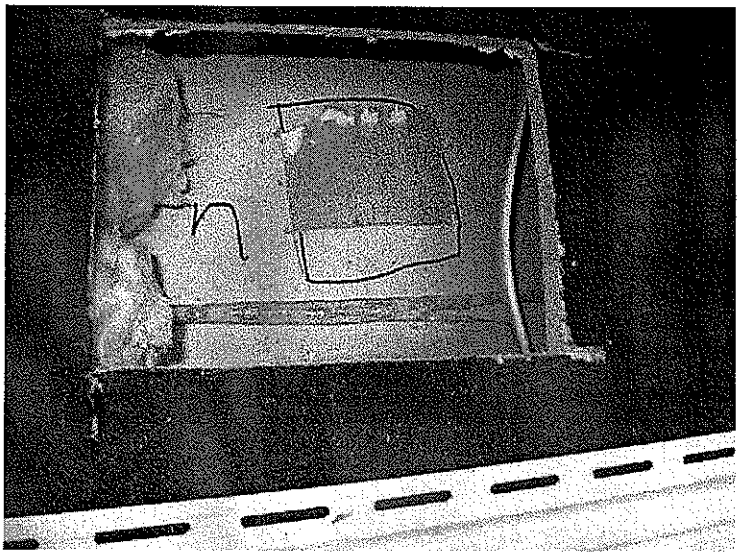
Wall Cavity #4 – Normal freckled paper wallboard with no visible fungal amplification, water damage, or degradation and moisture content measured dry at 11% to 16% non pronged.



Wall Cavity #5 – Normal freckled paper wallboard with no visible fungal amplification, water damage, or degradation and moisture content measured dry pronged at 8%.

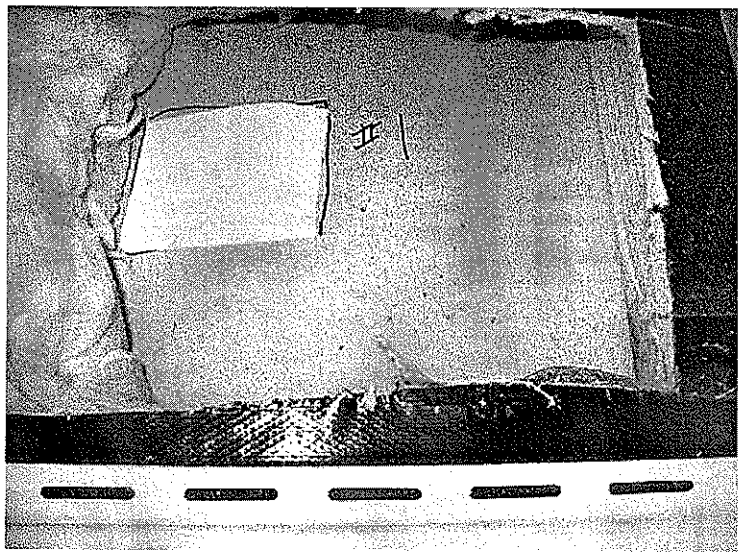


Wall Cavity #6 – Normal freckled paper wallboard with no visible fungal amplification, water damage, or degradation and moisture content measured dry pronged at 9%.

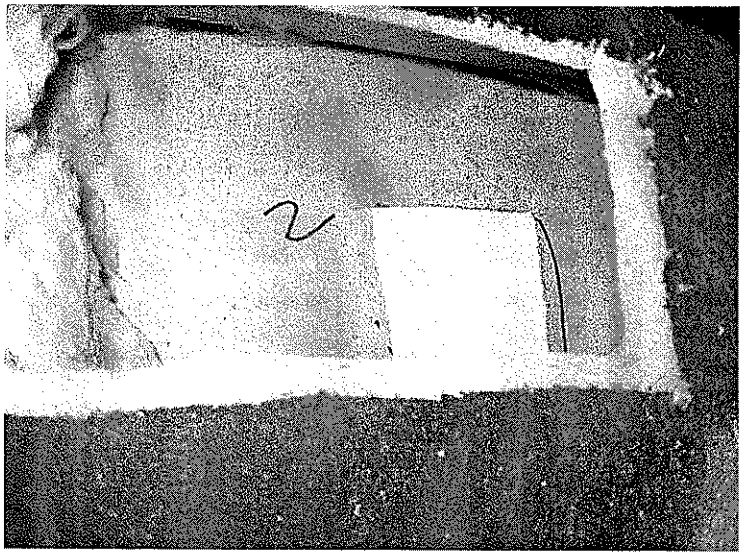


Wall Cavity #7 – Normal freckled paper wallboard with no visible fungal amplification, water damage, or degradation and moisture content measured dry, pronged at 7% - 8%.

Wall Cavity #8 – Normal freckled paper wallboard with no visible fungal amplification, water damage, or degradation and moisture content measured dry, pronged at 8%.



Wall Cavity #1 Master Bathroom – Normal freckled paper wallboard with mostly no visible fungal amplification, water damage, or degradation and moisture content measured dry, pronged at 8%. A small darkened area just above the "#1" was sampled (Sample #20) and showed high *Penicillium / Aspergillus* (P/A), and the normal appearing main sections (Sample 22) showed low P/A spores.



Wall Cavity #2 Master Bathroom – Normal freckled paper wallboard with visible fungal amplification and no water damage at 5 feet, and moisture content measured dry, pronged at 8%.

Wall Cavity #2 Master Bathroom – Normal freckled paper wallboard with visible fungal amplification and water damage at floor level.

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